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Annual report,
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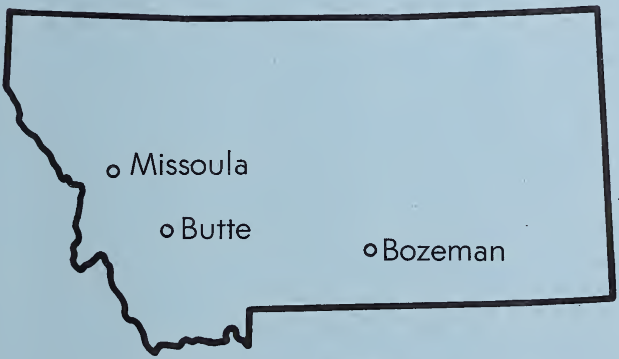
STATE TECHNICAL SERVICES



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ANNUAL REPORT

Parts One and Two

STATE TECHNICAL SERVICES

FISCAL YEAR 1967

STATE OF MONTANA
BUREAU OF BUSINESS AND ECONOMIC RESEARCH
UNIVERSITY OF MONTANA

Prepared by:

Patricia P. Bragg
October, 1967

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SUMMARY

Since Montana submitted both a Fiscal 1966 and 1967 Annual Plan, projects relating to both annual plans were initiated during the period covered by this report.

Under the Fiscal 1966 Annual Plan two participating institutions, the University of Montana and Montana State University conducted three educational programs. During the 1966-67 academic year the Department of Civil Engineering invited eight speakers to the Montana State University campus to conduct technical seminars. The topics discussed at these seminars included structural engineering, highway engineering, fluid mechanics, hydraulics and hydrology. Montana State University, in cooperation with the Montana Society of Civil Engineers, also held a two-day Soil Mechanics and Foundation Engineering Conference. Over 230 engineers and businessmen, representing 15 states, 2 Canadian provinces and Puerto Rico, attended the conference. Four technical sessions were held and presentations on slope stability, volume change in embankments, compacted fills and backfill adjacent to structures, were made by soil mechanics and foundation engineering experts; each session was closed with a discussion period and the final session was devoted entirely to general discussion. Each registrant will receive a copy of the published Proceedings which should be completed within the next few weeks.

The University of Montana School of Forestry presented a three-day seminar on the management of forest properties. Over

75 land surveyors, foresters, brokers and title personnel attended the discussions related to the analytical techniques of boundary location. Industry representatives and faculty members presented a series of professional papers followed by discussion periods. Recently the project director has been encouraged by numerous businessmen from the forest products industry to continue this program in other locations throughout the State.

Six of the nine projects approved for Fiscal 1967 have been initiated. Also, the Medical Services Institute, a Fiscal 1966 project, was repeated during this period. Funding was obtained from the excess registration fees resulting from the previous conference. The three institutions sponsoring these projects are Montana State University, the University of Montana and the Montana College of Mineral Science and Technology. In addition to increasing the number of participating institutions, the scope of State Technical Services was expanded during this fiscal year. Two of the six projects involve field-service activities, two others cover the broad area of reference service, and a fifth combines seminar and demonstration activities.

Montana State University has begun publishing a bimonthly Engineering Research and Development Newsletter describing important projects, programs, seminars and technical developments of interest to business and industry throughout Montana. The first issue was made available to approximately 2,000 businessmen; since that time numerous other interested businessmen have been added to the mailing list upon request. This same institution is conducting

a technical assistance program in the area of chemical processing. Firms currently processing barley, safflower oilseed, travertine, flax, phosphates and pulp and paper are among those which have been provided with information concerning new processing techniques, equipment adaptations, and scheduling changes. The nature of the assistance ranges from selection and dissemination of technical briefs related to a specific engineering or processing techniques to alternative structural and design layouts for plant modifications.

For the past several years Montana State University, in cooperation with the Montana State Board of Health, has conducted a workshop for water and waste treatment personnel. With the additional support provided by State Technical Services, the workshop will be expanded to a five-day program. This workshop, scheduled for October 1967, will consist of instruction in mathematics, chemistry, microbiology and hydraulics as applied to water and waste disposal and treatment.

Fiscal 1967 activities sponsored by the University of Montana include two educational programs and one demonstration. On June 5-7, 1967 the School of Forestry conducted a three-day Soil Technology Workshop. Participants received summaries of several professional papers and numerous illustrations concerning reforestation, silvicultural practices and hydrology before the conference. This technique provided the additional time necessary to conduct both field trips and seminars during the conference period. A Forest Mensuration Conference and a Remote Ignition

Demonstration comprise the remaining programs and are scheduled after June 30, 1967.

All three of the Fiscal 1967 activities sponsored by Montana College of Mineral Science and Technology have been initiated. Under the Mine Visitation Program, thirty-three active mines have been given technical assistance or information relating to mine operations. Because of possible immediate technological applications, five of these companies have been selected for further evaluation. Another project, The Directory of Engineering and Scientific Expertise, may be completed by January 1, 1967. Photographs and the text for the Description of Mining Methods publication have been completed and the report should be submitted to the printer by November 16, 1967.

PROGRAM DESCRIPTION

Administration and Planning

Although Montana has been active in State Technical Services since its inception, this is the first year in which major evaluation efforts have been undertaken. A sufficient number of individual projects and annual programs has been initiated to facilitate a critical examination of the relationship between these programs and the five-year goals established during the first year, the appropriateness of the goals themselves, and the organizational structure through which the goals and programs are established.

This examination revealed that, although the goals or priority areas outlined in the first Five-Year Plan are worthwhile, they do not reflect the full potential of State Technical Services. Rather these goals represent specific project objectives; consequently, an examination of the relationship between the goals and the programs simply indicated whether or not specific projects which had been anticipated were completed, implying that completion is indicative of progress while a failure to complete a project suggested an inadequacy in the program. Therefore, considerable time and effort were spent in clearly defining the goals and objectives for the succeeding five-year period based on the experience of the past two years and on the information generated by the active programs. Annual program elements will now be evaluated in terms of three long-range goals: (1) developing a balanced combination of field

service, demonstration, educational and referral activities; (2) establishing broad industry representation under all types of programs; and (3) providing an efficient exchange of ideas, reference material, and technological applications among the educational institutions and industry in Montana and the Rocky Mountain States.

A review of the annual program elements in terms of these three goals suggests that, while each of three annual programs represents a vast improvement over the preceding program, further changes in program content will undoubtedly occur during the next two years. Particular types of activities, such as educational programs, can be developed in a relatively short period of time because selected audiences are easily defined and the necessary expertise is available within the university and business communities. As a result the Fiscal 1966 program was limited to educational activities. Though these types of activities are an important means of disseminating technological information to business and commerce, they are not the only available means. In Fiscal 1967 two field service activities and one demonstration were also submitted and approved. The comparative success of the two existing field service activities indicates that additional field service activities will be developed for specific industries. Currently a portion of the second planning grant is being used to determine the feasibility of an additional field service activity and a referral center. The forest products industry, a major contributor to Montana's economy, and the growing retail trade

industry are likely prospects for field service activities.

The second goal, broad industry representation, has received more emphasis each year and will continue to be a major determinant of project approval. Fiscal 1966 activities--classified by industry representation--were largely confined to forestry and engineering; the Fiscal 1967 plan was expanded to include the mining industry. Additional industries, such as retail trade and services, will be included in Fiscal 1968 activities. There are still other industrial groups whose informational needs are as great as those now being assisted by State Technical Services.

As Montana's State Technical Services program begins to mature the importance of the third goal becomes increasingly apparent. Problems of duplicating programs, of measuring and comparing industry's informational needs and of isolated technologic applications tend to become more acute as the program progresses. Although technology is constantly changing and seemingly inexhaustible, the resources necessary to disseminate this information are not; they must, therefore, be utilized effectively. A statewide information system can be effective only if the participating institutions, the designated agencies and industry in Montana and the neighboring states establish a systematic communications network among themselves. As a first step in developing an effective statewide information system, the University Technical Services Council will be expanded to include one member from each of the qualified but non-participating

institutions. Even though these institutions may not have the available staff nor time to submit their own proposals, they will have an opportunity to contribute ideas to and to evaluate proposals submitted by other institutions.

These revisions and reorientations of Montana's State Technical Services program have been incorporated into the Revised Five-Year Plan and the related Fiscal 1968 Annual Program which was submitted earlier to the Office of State Technical Services in Washington.

Administrative responsibilities were also changed during the period covered by this report. Miss Patricia P. Bragg, who previously served as the coordinator for State Technical Services, assumed the duties of Director in 1967. She succeeds Dr. Norman E. Taylor who resigned as Director of the Bureau of Business and Economic Research to become the administrative vice-president of the University of Montana. With the assistance and guidance of the University Technical Services Council and the Advisory Council, the Director of State Technical Services assumes full responsibility for all planning activities.

Planning Grant Expenditures

A summary report of planning grant expenditures is attached (See Exhibit A). Much of the unexpended balance shown for the Fiscal 1967 planning grant has been expended or appropriated between June 30, 1967 and the date of this report. The allocation outlined in the request for the second planning grant adequately reflects anticipated expenditures.

Program Activities

Major problem areas and the relationship between specific projects and the Five-Year Plan have been discussed in an earlier section of this report. However, there are a few specific experiences which deserve mention in this section.

First, as the program progresses, cooperation between Montana and the Rocky Mountain States must be strengthened. A number of worthwhile projects have come to the attention of the designated agency. In many cases, however, these projects cannot be justified in an annual program; the initial costs involved in a single project frequently exceed Montana's total allocation, for example. Joint effort by the Rocky Mountain States would reduce the necessary contributions of each state. After the initial year a portion of such projects could be incorporated into the annual program. Special Merit proposals approved by the Federation of Rocky Mountain States such as the Air Pollution Control and Abatement Conference, the conference on Modern Technology for Evaluation of Mineral Properties and the Mobile Education Program in Wood Production and Utilization are all examples of projects which necessitate regional cooperation.

Second, although general goals regarding a balance among the possible types of State Technical Services activities have been established, further consideration should be given to the respective allocation of total funds. Priority listings have been used by the Advisory Council for the past two years; however, as more specific technological needs are identified program

elements may tend to become more consolidated which will require a more specific method of allocating funds among program classifications.

Third, assuming that the project directors are equally qualified in their area of expertise, relative success of the projects seems to depend upon two factors: (1) advance planning and publicity; and (2) program flexibility. Attendance and questionnaire reviews indicate that those programs which include at least two notifications prior to the conference are the most successful. This is particularly true for educational programs; even when sufficient time exists between the mailing of the brochure and the scheduled date, two brochures seem to be more effective.

Program flexibility is extremely critical. The time between submission and completion of the project may be as long as one and one-half years. Even though the general problem area remains the same and the project directors have done an excellent job in defining the problem, specific informational needs may arise between the initial contact with industry and the subsequent execution of the project. In the future project directors will be asked to justify the project both before submission and before completion. In the latter case the review could be on a sample basis.

Summary of User-Rate Data and Expenditures

Summary reports of user-rate data and project expenditures have been attached (See Exhibits B and C).

ADVISORY COUNCIL

Due to the death of Mr. Kanzler and the resignation of Mr. Schoknecht, two new members were appointed to Montana's Advisory Council. The appointees are Mr. Clay Fanslow, Sales Manager for the Anaconda Forest Products, and Mr. Albert T. Kersich, partner in the consulting firm of Hurlbut and Kersich.

Upon request, the State Technical Services Advisory Council submitted the following report to be included in the annual report:

> The Montana Advisory Council met twice during the year, and at one meeting, had the benefit of a discussion by a representative of the Department of Commerce. The background of almost two and a half years service on the Council has resulted in a better understanding of the objectives of the program, and hopefully, a more positive and agressive approach by the Council members in guiding the program toward those objectives.
>
> The programs in Montana to date have, with a few exceptions, been generated by the institution staffs, and reflect the feeling of these persons as to the need for information by the industry or potential users. If the industry or potential user feels that there is a need for this particular information, it would be coincidental. The point is that there is a need for the user or receiver of the information to be involved in determining the content of the programs. In many of our programs in Montana, there has been this sort of interchange, leading to the shaping of the program. We hope that this approach will be continued and expanded. In this respect, Montana's program appears to compare favorably with others.
>
> Efforts are being made to involve additional qualified institutions in the program, and to inform the citizens of the State of the opportunities under the act. Members of the Advisory Council have made themselves available for appearances before service clubs, Chambers of Commerce and industrial groups to make such information available.
>
> These activities, and the planning for regional programs, are actively being supported and guided by the Director with the stated encouragement of the Advisory Council. We have been fortunate to have constructive, well-conceived programs presented for inclusion during this development period. Hopefully, the quality and

impact of the Act will be greater with this experience and with the cooperation among the institutions, the University Technical Services Council and the Advisory Council.

As indicated in the text of the Advisory Council's report, the council met twice during Fiscal 1967. Mr. Martin Robbins attended the meeting on April 27, 1967, along with Advisory Council members and faculty members from all qualified institutions within the State. The attendance of a representative from the Washington office certainly did more than any other single activity to promote State Technical Services in Montana.

At the meeting held on May 31, 1967, The Advisory Council considered and approved the Fiscal 1968 Annual program and the related Five-Year Plan; since the submissions would require more funding than that allotted to Montana, the Advisory Council established priorities for all projects. The Council also considered alternative ways of further determining the informational needs of Montana businessmen.

FUTURE PLANS, CONCLUSIONS AND RECOMMENDATIONS

The problems encountered, the reappraisal of long-range goals and the increasing industrial representation discussed in earlier sections of this report reflect the future plans for State Technical Services in Montana. In summary, these plans include: (1) an increase in regional planning and programming; (2) a consolidation of the annual program elements; and (3) a further clarification of the procedural requirements.

The Regional Technical Services Council has been extremely beneficial, not only in generating programs which transcend state boundaries, but in appraising the informational needs of local businessmen. Standards set by the Council for acceptable programs and for coordination among the Rocky Mountain States have a direct impact on the achievement of local efforts. Hopefully, future developments will include a regional information retrieval and dissemination system.

Educational and field-service programs relating to a single industry must be further coordinated, both in Montana and in the region. In addition, a more efficient allocation of resources necessitates limiting each industry to only one educational program; when program submissions include several different proposals relating to a single industry, these programs will be consolidated into a conference series.

To achieve more advanced planning and an increasing emphasis on innovation and evaluation within the State Technical Services framework, program submissions, reimbursement requests, and other administrative tasks must be further refined at the state level. With increasing familiarity with the program, these administrative functions must become almost automatic.

EXHIBIT A

EXHIBIT A: REPORT OF PLANNING GRANT EXPENDITURES, FISCAL YEAR 1966

State MONTANA Planning Grant Date FEBRUARY, 1966

Designated Agency Bureau of Business and Economic Research

Activities Performed By Bureau of Business and Economic Research

Line Items	Approved Budget	Fiscal Year Costs	Balance
1. Salaries and Wages	$11,200.00	$12,835.25	(1,635.25)
2. Employee Benefits	292.21	334.87	(42.66)
3. Lecturers and Consultants			
4. Travel	5,000.00	2,893.41	$2,106.59
5. Consumable Supplies		434.66	(434.66)
6. Equipment (depreciation, rental, approved purchase)			
7. Communications			
8. Printing		1,667.90	(1,667.90)
9. Other (specify)			
10. Miscellaneous (Telephone, Mailing, etc.)	1,889.79	215.91	1,673.88
11.			
12.			
13.			
14. Total Direct Costs	18,382.00	18,382.00	
15. Indirect Costs	6,618.00	6,618.00	
16. Indirect Rate 36%			
17. Totals	25,000.00	25,000.00	

EXHIBIT A: REPORT OF PLANNING GRANT EXPENDITURES, FISCAL YEAR 1967

State MONTANA

Planning Grant Date APRIL, 1967

Designated Agency Bureau of Business and Economic Research

Activities Performed By Bureau of Business and Economic Research

Line Items	Approved Budget	Fiscal Year Costs	Balance
1. Salaries and Wages	$ 4,100.00	$ 130.12	$ 3,969.88
2. Employee Benefits			
3. Lecturers and Consultants			
4. Travel	3,300.00	570.24	2,729.76
5. Consumable Supplies			
6. Equipment (depreciation, rental, approved purchase)			
7. Communications			
8. Printing	400.00		400.00
9. Other (specify) Regional Planning	3,000.00		3,000.00
10. Miscellaneous (Telephone, Mailing, Supplies)	427.00	26.17	400.83
11.			
12.			
13.			
14. Total Direct Costs	11,227.00	726.53	10,500.47
15. Indirect Costs	3,773.00	3,773.00	
16. Indirect Rate 33.6%			
17. Totals	15,000.00	4,499.53	10,500.47

EXHIBIT B

EXHIBIT B: SUMMARY OF USER-RATE DATA, BY STS PROJECTS, FISCAL 1967

	Project Year, Number* and Title		Project Duration or Dates Performed	Individuals	Companies	Inquiries
1)	F6MN1	Econ. Mgt. of For. Properties	March 9-11, 1967	107	37	
	F6MN2	Hosp. Actg. Institute	June 19-20, 1967	28	21	
	F6SN2	Soil Mech. & Found. Engr.	Nov. 4-5, 1967	232	111	
	F6SN1	Engr. Mech. & Civ. Engr. Sem.	Seminar Series-8	347	120	
3)	F7MN3	Soil Tech. Workshop	June 5-7, 1967	15	5	
4)	F7TC1	Directory of Mont. Sc. & Engr.	January 31, 1967			1,516
	F7SC3	Research & Dev. Report	Continuing			
	F7SC4	Tech. Serv. Group	"		14	39
	F7TC2	Pub. of Well Illust. Explanation & Descr. of Mining Methods & Equipment	November 1968			
	F7TC3	Field Visitation (Mining)	Continuing		33	
5a)	Montana Wood Products Conference		Cancelled			
	Mgt. Seminar for Labor Unions and Business		"			
b)	Forest Mensuration Conference		Scheduled during Fiscal 1968			
	Forest Thinning by Remote Ignition		" " " "			
	Water and Water Waste Treatment Workshop		" " " "			
c)	Real Estate Educational Proposal		Cancelled (Group II)			
	The Resources, Dev., Processing, Products, and Ind. Future of Phosphate Rock in the Western Phosphate Region		" " "			
	Montana Inventors Congress		" " "			
	Water Conservation and Management		" " "			
	Land Improvement Workshop		" " "			
			Total	729	341	1,555

*F6 Fiscal 1966

M University of Montana
S Montana State University
T Montana College of Mineral Science & Technology

N New Program
C Cont. Program

1 No. 1

EXHIBIT B: CONTINUED

During the Fiscal Year 1967, it was deemed necessary to cancel or reschedule certain program elements listed in the 1967 Annual Plan submitted June 1966.

a) The following were cancelled due to exhaustion of allocated funds:
   Montana Wood Products Conference
   Management Seminar for Labor Unions and Business

b) Following are projects which were funded in FY 1967, but they are scheduled to be performed in FY 1968:
   Forest Mensuration Conference
   Forest Thinning by Remote Ignition
   Water and Water Waste Treatment Workshop

c) Group II of the annual report contains five projects representing a secondary priority. All of the five projects were cancelled and not rescheduled for FY 1968.

EXHIBIT C

EXHIBIT C: SUMMARY OF EXPENDITURES BY PROJECTS DURING FISCAL YEAR 1967

Project Year Number[1] and Title		Approved Budget	Total Costs To Date	Federal Funds in Budget	Federal Funds Received[2]	Balance of Federal Funds
F6MN1	Econ. Mgt. of For. Properties	1,362.00	1,555.42	681.00	681.00	- - - -
F6MN2	Hosp. Actg. Institute[3]	3,002.00	2,370.93	1,051.56	1,051.56	- - - -
F7MN1	Soil Tech. Workshop	3,035.00	2,292.52	1,517.00	1,146.00	371.00
F6SN2	Soil Mech. & Found. Engr.	3,089.70	6,744.57	2,700.00	2,700.00	- - - -
F6SN1	Engr. Mech. & Civil Engr. Seminar	3,660.78	3,715.48	1,830.00	1,830.00	- - - -
F7TN1	Directory of Montana Sc. & Engr.	19,614.00	5,525.78	7,375.00	4,607.00	2,768.00
F7SC3	Research & Dev. Report	10,143.00	2,676.88	3,419.00	2,193.00	1,226.00
F7SC4	Tech. Service Group	32,937.00	6,595.31	9,083.00	5,569.00	3,514.00
F7TN2	Publication of Mining Methods	4,160.00	2,726.00	1,363.00	341.00	1,022.00
F7TC3	Field Visitation (Mining)	25,180.00	7,702.57	12,590.00	5,749.00	6,841.00
F6MA	Administr. Expense	2,347.00	2,347.00	1,173.50	1,173.50	- - - -
F7MA	" "	8,100.00	2,344.00	4,050.00	1,172.00	2,878.00
F7SC4	Water & Waste Water Treatment Workshop	3,840.00	- - - -	1,918.00	- - - -	1,918.00
F7MN2	Forest Mensuration Conference	8,524.00	- - - -	4,262.00	- - - -	4,262.00
F7MC3	Forest Thinning by Remote Ignition	2,747.00	- - - -	1,373.00	343.00	1,030.00
	Total	131,750.48	46,596.46	54,386.06	28,556.06	25,830.00

[1] For number code, see Exhibit B

[2] Includes Advances

[3] This is a re-run project on profit left from fiscal 1966 program

EXHIBIT D

Exhibit D -- Fiscal 1967

State: Montana

Project Year, Number and Title: F6MN1; Economic Management of Forest Properties

Annual Program Reference: Addendum

STS Activity: Educational

Technical Area: Boundary Location and Land Surveying

Participating Institution: University of Montana

Department: School of Forestry

Director: M. L. Haiges

Location of Project: Missoula, Montana

Project Duration and Status: March 9-11, 1967; completed

Project Description: The purpose of this seminar was to provide land surveyors and foresters with an understanding of boundary location techniques and principles. Through a combination of lectures, demonstrations and professional papers, land surveyors, foresters, title personnel and brokers had an opportunity to explore the area of boundary location.

User-Rate Data: individuals, 107
companies, 37

Effectiveness in Achieving Objectives: Evaluation of the questionnaires received from the participants suggests that the program was successful. Ninety-eight percent of the sample rated the programs from good to very good. Regarding the subject matter, 96 percent thought it was relevant and warranted the expenditure of time and money. Personal letters from the Bureau of Land Management, Montana Land Surveyor's Assocation and Northern Pacific Railway reflect the quality of the program. These groups felt that it contributed more to field surveying and land management than any program held to date in Montana.

Direct Benefits: Notes on certain aspects of the conference were compiled by participants representing the Northern Pacific Railway and circulated to their Land Management Department for immediate adoption.

Evaluation Procedures: Evaluation of the seminar was accomplished by:

(1) a questionnaire to 50 percent of the participants (a summary is attached);
(2) letters from 3 participating firms; and
(3) number of people serviced compared to budget level.

Comments and Suggestions: A number of requests to hold this conference in other locations have been received. Hopefully this program will be approved as an appropriate substitute for the Forest Mensuration Conference which was cancelled. Participants suggested that real estate planning and urban surveying topics should be included in subsequent programs.

SUMMARY QUESTIONNAIRE

Economic Management of Forest Properties

School of Forestry
University of Montana
Missoula, Montana

March 9-11, 1967

1. Name____________________ Position____________________

   Company____________________ Division____________________

   Street____

   City_______________ State_______________ Zip Code__________

2. What function best describes your own work? Check as many classifications as necessary.

18	Design	0	Product Development
7	Production	6	Sales and Marketing
2	Research	3	Education
15	Management, administration and finance	14	Other (describe) 1 Const. Insp., 9 Land survey, 2 Land use, 1 appraisor, 1 Procurement
37	Engineering		

3. How many employees are there in your firm? If a multi-plant or multi-divisional corporation, check the size of local plant or division.

18	1-19 employees	1	500-999 employees
14	20-99 employees	5	1,000 or more employees
8	100-499 employees		

4. What is your level of highest educational attainment? Check one.

3	Elementary school	19	Bachelor's Degree
15	High School	0	Master's Degree
17	Junior College	1	Doctoral Degree

5. What is your age bracket? Check one.

10	30 or under	20	41-65
21	31-40	3	66 or older

6. Circle the numbered Standard Industrial Classification that best describes the principal interests of your firm.

Agricultural, forestry, and fisheries

2	Commercial farms	13	Forestry
3	Noncommercial farms		Fisheries
2	Agricultural services and hunting and trapping		

Mining

1	Metal mining	1	Mining and quarrying of nonmetallic minerals, except fuels
	Anthracite mining		
	Bituminous coal and lignite mining		
3	Crude petroleum and natural gas		

Contract construction

6	Building construction, general contractors	3	Construction, special trade contractors
10	Construction other than building construction, general contractors		

Transportation, communication, electric, gas and sanitary services

	Railroad transportation	3	Water transportation
2	Local and suburban transit and interurban passenger transportation		Transportation by air
		5	Pipe line transportation
		2	Transportation services
1	Motor freight transportation and warehousing	1	Communication
		4	Electric, gas and sanitary services

Finance, insurance, and real estate

	Banking	10	Real estate
	Credit agencies and other banks	2	Combinations of real estate insurance, loans, law offices
	Security and commodity brokers, dealers, exchanges and services	1	Holding and other investment companies
	Insurance carriers		
	Insurance agents, brokers and services		

Services

	Hotels, rooming houses, camps and other lodging places		Miscellaneous repair services
			Motion pictures
2	Personal services	4	Amusement and recreation services, except motion pictures
	Miscellaneous business services		
	Automobile repair, automobile services, and garages		Medical and other health services

1	Legal services
2	Educational services
0	Museums, art galleries, botanical and zoological gardens
0	Non profit membership organizations
2	Private households
2	Miscellaneous services

Government

14	Federal government
11	State government
6	Local government
0	International government

Nonclassifiable establishments

	Nonclassifiable establishments

7. Your college work was primarily in the area of:

28	Engineering
4	Geology
2	Liberal Arts
1	Architecture
8	Math/Physics
3	Commerce/Business
2	Other (specify)
	4 Forestry

8. As a result of the conference I am better prepared to cope with the following specific applications:

9. Comments (favorable or unfavorable) are invited:

10. Kindly rate each of the following as indicated:

	VERY GOOD	GOOD	AVERAGE	FAIR	POOR
Speakers: In your opinion they were generally competent in their area of participation.	35	18	1	--	--
Speakers: In your opinion their information was generally backed by personal experience and/or adequate familiarity with the particular subject.	38	15	1	--	--
Speakers: In your opinion their addresses were generally delivered in an interesting and concise manner.	31	19	4	--	1
Location: Did you find the geographic location of the conference acceptable?	33	18	1	--	1
Location: Did you find the conference facilities in an acceptable location?	32	19	2	--	--
Facilities: Did you find the conference facilities (auditorium, rooms, eating) to be acceptable, comfortable, etc?	33	18	3	--	--
Subject matter: The information was presented at a level that was understandable.	39	14	1	--	--
Subject matter: The subject matter was relevant enough to warrant your expenditure of time and money.	34	18	2	--	--
Subject matter: New thoughts were brought to your attention.	27	23	4	--	--
Subject matter: In general points being discussed were not left unclarified, and all points generally had ample amplification.	12	27	12	2	1
Discussions: You felt free to express your opinions and/or ask questions during the discussions.	32	14	5	2	1

	VERY GOOD	GOOD	AVERAGE	FAIR	POOR
Sessions: The sessions were held on schedule.	23	18	11	2	--
Social: There was sufficient time to make the desireable social/professional contacts with other attendees.	15	30	7	1	--
Over-all: I came away from the conference better prepared to perform my tasks.	28	21	4	--	--
Over-all: I would rate the over-all conference	40	13	1	--	--

Exhibit D -- Fiscal 1967

State: Montana

Project Year, Number and Title: F6MN2; Hospital Accounting Institute

Annual Program Reference: Re-run of Fiscal 1966 program of same title

STS Activity: Educational

Participating Institution: University of Montana; Montana Hospital Association

Department: School of Business

Director: Patricia P. Bragg

Location: Missoula, Montana

Project Duration and Status: June 19-20, 1967; completed

Project Description: The purpose of the conference was to expose attendees who participated in the earlier institute to more sophisticated techniques of hospital accounting. For those attending for the first time, exposure to basic accounting methodology was provided. Hospital administrators and accountants reviewed either the basic concepts of hospital accounting or data processing applications to financial analysis, budgeting and fund accounting. Participants were grouped according to previous experience and interest.

User-Rate Data: individuals, 28
companies, 21

Effectiveness of Achieving Objectives: Questionnaires received from the participants indicated that the institute was partially successful. Fund accounting and accounting for medicare costs were considered particularly interesting and of vital importance to the future of hospital accounting. The conference was unsuccessful in two respects. First, final approval of the program by the Hospital Accountants was received too

late to facilitate necessary promotional time. Twice the number of participants should have been enrolled with more lead time. University accomodations were inadequate due to the timing of the institute.

Direct Benefits: Several participants remarked that it was the first exposure to the data processing equipment installed in selected hospitals. Medicare accounting on an automated system no longer appears to be an impossible task.

Evaluation Procedures: The institute was evaluated by questionnaires submitted at the end of the program and by personnel interviews conducted by the Director. A summary questionnaire is attached; interviews suggested that the program was successful for those who attended. However, considering the quality of the speakers, content, etc., many more people should have been serviced.

Comments and Suggestions: This program will probably continue, sponsored by the Hospital Accounting Association and the University of Montana. Much to the amazement of some, this institute proved that "quality" does not sell itself.

SUMMARY QUESTIONNAIRE

Hospital Accounting Institute
State Technical Services, Montana Hospital Association
and School of Business Administration
University of Montana
Missoula, Montana

June 19-20, 1967

1. Name__________________ Position__________

Company__________________ Division__________

Street______________________________________

City______________ State__________ Zip Code_____

2. What function best describes your own work? Check as many classifications as necessary.

____ Design
____ Production
____ Research
22 Management, Administration and Finance
____ Engineering

____ Product Development
1 Sales and Marketing
____ Education
4 Other (describe)___ Payroll, Reports

3. How many employees are there in your firm? If a multi-plant or multi-divisional corporation, check the size of local plant or division.

____ 1-19 employees
11 20-99 employees
14 100-499 employees

2 500-999 employees
____ 1,000 or more employees

4. What is your level of highest educational attainment? Check one.

3 Business College
____ Elementary School
16 High School
2 Junior College

6 Bachelor's Degree
____ Master's Degree
____ Doctoral Degree

5. What is your age bracket? Check one.

8 30 or under
5 31-40

14 41-65
____ 66 or older

6. Circle the numbered Standard Industrial Classification that best describes the principal interests of your firm.

Services:

Hotels, rooming houses, camps and other lodging places
Personal services
Miscellaneous business services
Automobile repair, automobile services, and garages

Miscellaneous repair services
Motion pictures
Amusement and recreation services, except motion pictures
27 Medical and other health services

7. Your college work was primarily in the area of:

___ Engineering
___ Geology
1 Liberal Arts
___ Architecture

1 Math/Physics
11 Commerce/Business
___ Other (specify) __________

8. As a result of the conference I am better prepared to cope with the following specific applications:

12--The conference helped them in Medicare--Records and Billing.

6--Financial analysis and statements.

4--Fund accounting.

4--Didn't comment.

9. Comments (favorable or unfavorable) are invited:

10--Didn't comment

8--Favorable--very good institute

2--Unfavorable

10. Kindly rate each of the following as indicated:

	VERY GOOD	GOOD	AVERAGE	FAIR	POOR
Speakers: In your opinion they were generally competent in their area of participation.	17	8	1	--	--
Speakers: In your opinion their information was generally backed by personal experience and/or adequate familiarity with the particular subject.	14	8	2	2	--
Speakers: In your opinion their addresses were generally delivered in an interesting and concise manner.	16	9	1	--	--
Location: Did you find the geographic location of the conference acceptable?	18	7	1	--	--
Location: Did you find the conference facilities in an acceptable location?	18	8		--	--
Facilities: Did you find the conference facilities (auditorium, rooms, eating) to be acceptable, comfortable, etc.?	15	6	2	3	--
Subject Matter: The information was presented at a level that was understandable.	17	7	2	--	--
Subject Matter: The subject matter was relevant enough to warrant your expenditure of time and money?	14	10	1	1	--
Subject Matter: New thoughts were brought to your attention?	13	9	2	1	1
Subject Matter: In general, points being discussed were not left unclarified, and all points generally had ample amplification.	14	8	4	--	--
Discussions: You felt free to express your opinions and/or ask questions during the discussions.	22	4		--	--

	VERY GOOD	GOOD	AVERAGE	FAIR	POOR
Sessions: The sessions were held on schedule.	22	4	--	--	--
Social: There was sufficient time to make the desirable social/professional contacts with other attendees.	20	6	--	--	--
Over-all: I came away from the conference better prepared to perform my tasks.	16	7	2	1	--
Over-all: I would rate the over-all conference	17	8	1	--	--

Exhibit D -- Fiscal 1967

State: Montana

Project Year, Number and Title: F7MN3; Soil Technology Workshop

Annual Program Reference: p. 33

STS Activity: Educational

Technical Area: Soil Sciences

Participating Institution: University of Montana

Department: School of Forestry

Director: Dr. Thomas Nimlos

Location: Lubrecht Experimental Forest; Missoula, Montana

Project Duration and Status: June 5-7, 1967; completed

Project Description: Through a combination of lectures and field demonstrations, industrial forest managers had an opportunity to study and observe how soils respond hydrologically and mechanically to management. The final afternoon was devoted to a discussion of land management problems and a summary critique of the entire program.

User-Rate Data: individuals, 15
companies, 5

Effectiveness in Achieving Objectives: Participants indicated that the workshop will definitely help to improve their decisions as land managers, especially in the areas of slash disposal, reforestation and silvicultural practices. Field demonstrations were considered advantageous. Requests for additional programs in the areas of ecology, entomology, and taxonomy support the conclusion that the program was successful.

Direct Benefits: Thus far, there are no technological applications which can be traced directly to the material presented at the conference, other than a recognition of an area which has previously been unexplored and which was

considered entirely apart from effective forest land management.

Evaluation Procedures: Evaluation of this workshop was accomplished by a questionnaire and personal critiques at the end of the workshop. A summary questionnaire is included in this report.

Comments and Suggestions: Although the program was successful, careful planning and promotional efforts should make it possible to serve a larger and more varied audience. The questionnaires also suggest that perhaps many industries have greater difficulty in defining their problems than in finding a solution once the problems have been defined.

SUMMARY QUESTIONNAIRE

SOILS WORKSHOP

School of Forestry
University of Montana
Missoula, Montana

June 5-7, 1967

The first seven questions are to provide background information for STS evaluation.

1. Name____________________ Position____________________

Company____________________ Division____________________

Street____

City____________________ State____________________ Zip Code____

2. What function best describes your own work? Check as many classifications as necessary.

_1_ Design
_4_ Production
_2_ Research
_9_ Management, Administration, and Finance
_1_ Engineering

_0_ Product Development
_0_ Sales and Marketing
_0_ Education
_2_ Other (describe) hazard reduction & public relations

3. How many employees are there in your firm? If a multi-plant or multi-divisional corporation, check the size of local plant or division.

_0_ 1-19 employees
_2_ 20-99 employees
_1_ 100-499 employees

_5_ 500-999 employees
_3_ 1,000 or more employees

4. What is your level of highest educational attainment? Check one.

____ Elementary School
____ High School
____ Junior College

_11_ Bachelor's Degree
____ Master's Degree
____ Doctoral Degree

5. What is your age bracket? Check one.

_3_ 30 or under
_6_ 31-40

_2_ 41-65
_0_ 66 or older

6. Circle the numbered Standard Industrial Classification that best describes the principal interests of your firm.

Agricultural, forestry, and fisheries

1 Commercial farms
___ Noncommercial farms
___ Agricultural services and hunting and trapping
11 Forestry
___ Fisheries

Mining

___ Metal mining
___ Anthracite mining
___ Bituminous coal lignite mining
___ Crude petroleum and natural gas
___ Mining and quarrying of nonmetallic minerals, except fuels

Contract construction

1 Building construction general contractors
___ Construction other than building construction, general contractors
___ Construction, special trade contractors

7. Your college work was primarily in the area of:

___ Engineering
___ Geology
___ Liberal Arts
___ Architecture
___ Math/Physics
___ Commerce/Business
11 Other (specify)
2 forest management, 9 forestry, one of whom was also in natural sciences

The next group of questions are to evaluate the technical value of the workshop. Your comments will be useful in designing future programs. Please give thorough and critical comments.

8. Did the workshop warrent the time and money spent on it?

9. How could the workshop have been better organized?

10. Was there too much emphasis on one aspect of soils? If so, what?

____

____

11. Was there too little emphasis on one aspect of soils? If so, what?

____

____

12. Were the facilities (housing, food, transportation) adequate?

____

____

13. Was there too much emphasis on the field study of soils?

____

____

14. How will the workshop improve the decisions you make as a land manager?

____

____

15. Other comments:

____

____

Exhibit D -- Fiscal 1967

State: Montana

Project Year, Number and Title: F6SN2; Soil Mechanics and Foundation Engineering Seminar

Annual Program Reference: Addendum

STS Activity: Educational

Technical Area: Soil Mechanics, Foundation Engineering

Participating Institution: Montana State University

Department: Civil Engineering

Director: Dr. Glen Martin

Location: Helena, Montana

Project Duration and Status: November 4-5, 1967; completed

Project Description: The purpose of this conference was to provide a forum for open discussion on many technical topics in soil engineering and to update the profession of soil mechanics and engineering in Montana. Professional papers covering topics such as slope stability, volume change in embankments, compacted fills and backfill adjacent to structures were discussed during the five two-hour sessions. A published proceedings covering the formal presentations, addresses and informal discussion will be distributed to all attendees.

User-Rate Data: individuals, 232
companies, 111

Effectiveness in Achieving Objectives: The attendance of over 230 engineers representing 14 states, 2 Canadian provinces and Puerto Rico indicates the success of the conference. Of those returning a detailed questionnaire, 95 percent gave the conference an excellent, very good or good rating. Only .8 percent of the responses appeared in the "poor" column.

Direct Benefits: Telephone conversations with attendees revealed two successful applications of new technology which can be traced directly to the stimulus provided by the conference.

Evaluation Procedures: Initial evaluation of the conference was achieved by asking the participants to return a questionnaire. A summary questionnaire is attached. Two follow-up procedures will be used: first, requests for the proceedings from those not attending will be used as a measure of interest in this conference. Secondly, attendance lists for similar conferences will be checked against those attending this conference to determine how many participants maintained their interest in this program.

Comments and Suggestions: The importance of a capable project director is clearly illustrated by this conference. Promotional efforts and conference scheduling were exceptionally well organized.

QUESTIONNAIRE

CONFERENCE ON SOIL MECHANICS AND FOUNDATION ENGINEERING
Helena, Montana -- November 4-5, 1966

1. NAME:
   TITLE:
   COMPANY:
   ADDRESS:

2. Which of the following best describes the principal activity of your organization? (Check one only)

   48 Consulting Engineering
   7 Contracting/Construction
   3 Equipment Sales
   2 Architecture
   86 Federal Agency
   22 State Agency
   1 Local Agency
   21 Education/Research
   10 Other (Specify) ________________

3. How many technical and professional employees are there in your firm or organization in your local office? (Check one)

   38 1 to 5
   41 6 to 10
   55 10 to 25
   26 26 to 50
   30 over 50

4. What function best describes your work within the firm or organization? (Check not more than two)

   77 Design
   22 Education/Research
   72 Management/Administration
   23 Inspection
   4 Sales/Service
   6 Technician
   23 Consultant
   9 Student
   17 Field Supervisor
   12 Other (Specify) ________________

5. What is your age bracket?

   48 30 or under
   86 31 to 40
   34 41 to 50
   20 51 to 60
   6 61 to 65
   -- over 65

6. What is your level of highest educational attainment?

1 Elementary School

8 High School

6 Junior College

140 Bachelor's Degree

32 Master's Degree

5 Doctoral Degree

7. Your college work was primarily in the area of:

171 Engineering

11 Geology

1 Liberal Arts

6 Architecture

2 Math/Physics

0 Commerce/Business

6 Other (Specify)

____

8. Kindly rate each of the following as indicated:

	SUPERIOR	VERY GOOD	GOOD	FAIR	POOR
Speakers: In your opinion they were generally competent in their area of participation.	52	112	27	--	--
Speakers: In your opinion their information was generally backed by personal experience and/or adequate familiarity with the particular subject.	54	97	32	2	--
Speakers: In your opinion their addresses were generally delivered in an interesting and concise manner.	15	96	70	9	1
Location: Did you find the geographic location of the conference acceptable.	53	83	51	5	1
Location: Did you find the conference facilities in an acceptable location.	46	45	50	5	1
Facilities: Did you find the conference facilities (auditorium, rooms, eating) to be acceptable, comfortable, etc.	50	99	42	2	--
Subject Matter: The information was presented at a level that was understandable.	46	98	41	3	2
Subject Matter: The subject matter was relevant enough to warrant your expenditure of time and money.	33	109	36	9	3
Subject Matter: New thoughts were brought to your attention.	29	100	63	7	5
Subject Matter: In general points being discussed were not left unclarified, and all points generally had ample amplification.	13	80	81	15	2
Discussions: You felt free to express your opinions and/or ask questions during the discussions.	30	88	61	9	2
Sessions: The sessions were held on schedule.	50	97	40	3	--
Social: There was sufficient time to make the desirable social/professional contacts with other attendees.	23	88	50	14	2
Over-all: I came away from the conference better prepared to perform my tasks in soil mechanics and foundation engineering.	20	91	69	6	2
Over-all: I would rate the over-all conference	43	112	31	3	2

Exhibit D -- Fiscal 1967

State: Montana

Project Year, Number and Title: F6SN1; Engineering Mechanics and Civil Engineering Seminar

Annual Program Reference: Addendum

STS Activity: Educational

Technical Area: Civil Engineering and Engineering Mechanics

Participating Institution: Montana State University

Department: Civil Engineering

Director: Dr. Glen Martin

Location: Bozeman, Montana

Project Duration and Status: 1966-67 Academic year; completed

Project Description: Many selected areas of new technology and innovation in the area of civil engineering could not be considered appropriate subject matter for an entire two- to three-day conference. At the same time many such areas need to be presented to practicing engineers and physical scientists. The purpose of this eight-series seminar was to bring specialized knowledge to the attention of engineers, architects and physical scientists. Sessions covered by the seminar series included: (1) matrix methods in structural mechanics; (2) earthquakes and liquefaction; and (3) propogation of pressure waves in pipelines.

User-Rate Data: individuals, 347
companies, 111

Effectiveness in Achieving Objectives: With the exception of one seminar, this series provided real initiative to practicing engineers and physical scientists. Most of the material was new and fairly controversial. An average of 43 participants suggests that the speakers were qualified and interesting.

Direct Benefits: No direct applications of new technology can be traced to information presented at the seminar

series; however, the encouragement to continue this type of project is indicative of effective dissemination.

Evaluation Procedures: The project director used personal interviews to evaluate the seminar series. In addition, Advisory Council members and members of other participating institutions referred their personal evaluations to the designated agency.

Comments and Suggestions: Combining two topics into one session would, perhaps, be as effective as eight separate sessions, particularly for those who have to travel for long distances in order to attend.

Exhibit D -- Fiscal 1967

State: Montana

Project Year, Number and Title: F7TC1; Directory of Scientists and Engineers

Annual Program Reference: p. 57

STS Activity: Referral

Technical Area: Engineering

Participating Institution: Montana College of Mineral Science and Technology

Department: Petroleum Engineering

Director: Herbert G. Warren

Location: Montana

Project Duration and Status: Fiscal 1967; completion data scheduled for December 31, 1967

Project Description: The proposed directory and related file system will provide the first comprehensive listing of the scientists and engineers in the state. Engineers and scientists will be classified in the Directory according to specific fields of interest; duplicate files containing the address, education, work experience, current employment, and consulting availability of each engineer and scientist will be maintained at the different educational units. A copy of the cover letter and data form used in compiling the information are included in this report.

User-Rate Data: individual mailings, 1,516

Effectiveness in Achieving Objectives: Of the initial 1,500 data forms mailed out, the return was as high as 85 percent. For the second run of about 400 which was distributed recently, the return is about 76 percent to date. This cooperation of engineers and scientists suggests that a directory was worthwhile.

Direct Benefits: Since the Directory has not been published nor available for use, no direct benefits are apparent at this time.

Evaluation Procedures: Since the Directory was initially scheduled for revision every five years, evaluation was to be accomplished by measuring industry's willingness to fund the project in part. With the low priority given this project in Fiscal 1968, the evaluation procedures will probably be limited to a questionnaire and a compilation of requests for additional copies.

Comments and Suggestions: If feasible, it would seem desirable to combine the published directories for the eight Rocky Mountain States. The State Technical Services Council is currently reviewing the possibility of such a directory.

A Directory of Montana Scientists and Engineers is being compiled and published by the Engineering Division, Montana College of Mineral Science and Technology. An individual file of each engineer/scientist will be kept, the pertinent information from which will be published annually for general distribution to business firms, governmental agencies, and be made available to the public. The master file will be kept at this college, with duplicate files at the University of Montana and Montana State University.

The enclosed Engineer/Scientist Directory Information Form is the means by which we have chosen to obtain the necessary information for the Directory. You are asked to complete and return the form to us at your earliest convenience. Twenty-seven separate fields of expertise are listed. These were chosen as perhaps those that would adequately identify most engineers and scientists in Montana. If your B.S. degree is in some other field, please state this field in column 28 or 29. We also ask you to please notify us of any change in your address, job availability, or other pertinent changes as soon as such change occurs so that our master file may be kept current.

We would also appreciate your advising us of other scientists or engineers in your acquaintance to whom we may have failed to send a questionnaire. Any information you desire to remain confidential will not be published in the directory, but kept in your individual file.

Your help in making this project a success will be greatly appreciated.

Yours very truly,

Herbert G. Warren, Project Director
Associate Professor
Petroleum Engineering

MONTANA COLLEGE OF MINERAL SCIENCE AND TECHNOLOGY
Butte, Montana 59701

Montana Engineers/Scientists Directory Information Form

NAME____

ADDRESS____
(Street) (City) (State) (Zip Code)

TELEPHONE (include area code)______________ ______________
(Home) (Work)

EDUCATION (beyond High School)

COLLEGE ATTENDED	DEGREE(s) RECEIVED (date)	MAJOR FIELD (date)

FIELD(s) OF EXPERTISE
(Check those areas of greatest experience in which you feel best qualified)

1.____Agriculture
2.____Agronomy
3.____Astronomy
4.____Biology
5.____Botany
6.____Chemistry
7.____Chemical Engineering
8.____Civil Engineering
9.____Electrical Engineering
10.____Geological Engineering
11.____Industrial Engineering
12.____Mechanical Engineering
13.____Metallurgical Engineering - Extractive
14.____Metallurgical Engineering - Physical
15.____Mineral Dressing Engineering
16.____Mining Engineering
17.____Petroleum Engineering
18.____Engineering Science
19.____Engineering, Other (specify)
____
20.____Forestry
21.____Geology
22.____Geophysics
23.____Hydrology
24.____Mathematics
25.____Meteorology
26.____Physics
27.____Zoology
28.____Other (specify)________
____

DETAILS OF FIELD(s) (Sub-Classifications, etc.) ______________________

____

____

____

REGISTERED______________________________________
(Field) (Registration No.) (State) (Date)

PROFESSIONAL ORGANIZATIONS____

EMPLOYER____

EMPLOYER'S ADDRESS____
(Street) (City) (State) (Zip Code)

PROFESSIONAL WORK EXPERIENCE:
(Include Consultant Experience - Give Names & Address of Past Employers/Clients)

(Attach additional sheets if necessary)

IF AVAILABLE FOR CONSULTING SHOW FIELD OF EXPERTISE BY NUMBER ( ) ( ) ( )

IF AVAILABLE FOR SUMMER OR OTHER TEMPORARY ASSIGNEMNT SHOW FIELD OF EXPERTISE BY NUMBER ( ) ( ) ( ) ( )

ADDITIONAL INFORMATION____

(Attach additional sheets if necessary)

____
(Signature) (Date)

Exhibit D -- Fiscal 1967

State: Montana

Project Year, Number and Title: F7SC3; Engineering Research and Development Report

Annual Program Reference: p. 5

STS Activity: Newsletter

Technical Area: Engineering

Participating Institution: Montana State University

Department: Industrial Development Center (Engineering Research Laboratories)

Director: Dr. Phil McCandless

Location: Bozeman, Montana

Project Duration and Status: Continuing; enters second year of operation in February, 1968

Project Description: A monthly newsletter which includes lists and descriptions of new research and development projects, information relating to new products and processes developed within the laboratories, with particular emphasis on industrial applications, and lists of featured speakers is being sent to approximately 2,000 businessmen and engineers. The newsletter was scheduled for monthly publication but has since been changed to a bi-monthly distribution.

User-Rate Data: company requests, 12
total inquiries, 44 (in addition to mailing list)

Effectiveness in Achieving Objectives: The quality of the newsletter far surpasses initial plans. It is, however, unfortunate that a monthly distribution could not have been maintained. Hopefully, publication dates can become more consistent as the program progresses.

Direct Benefits: Numerous letters were received complimenting the efforts of the staff of Montana State University in keeping Montana's businessmen apprised of University work. A typical letter is included in this report.

Evaluation Procedures: At the end of one year, each businessman on the mailing list will be surveyed to determine his interest in the publication. Businessmen will also be asked to evaluate the newsletter by indicating which items are of most interest and what additional information should be included.

Comments and Suggestions: none

May 17, 1967

Editor, College of Engineering Newsletter
Montana State University
Bozeman, Montana 59715

Dear Sir:

I was both surprised and pleased to receive Volume 1, Number 1 of your newsletter.

Any attempt by any educational institution to keep its graduates informed as to what is going on in the institution is commendable and well worthwhile. Support can be given to the College from many sources to help solve mutual problems when the alumni are informed as to its activities.

Congratulations and best wishes for success.

Sincerely,

Dix C. Shevalier, EE '35, P.E.
P. O. Box 1722
Helena, Montana

DCS/dc

Exhibit D -- Fiscal 1967

State: Montana

Project Year, Number and Title: F7SC4; Technical Services Group

Annual Program Reference: p. 8

STS Activity: Field Service

Technical Area: Chemical Engineering

Participating Institution: Montana State University

Department: Industrial Development Center (Engineering Research Laboratories)

Director: Dr. Phil McCandless

Location: Statewide

Project Duration and Status: Continuing; began in February 1967 and approved through Fiscal 1968

Project Description: This group makes itself available to any Montana firm requiring and wanting technical assistance in chemical processing. The type of assistance typically provided includes: (1) recommending ways to cut manufacturing costs and to improve efficiency by using the latest technology; (2) pointing out developments of new products and processes that could be adapted to their operations; and (3) advising the introduction of new equipment or processing control and new techniques to improve efficiency.

User-Rate Data: companies, 14
inquiries, 39

Effectiveness in Achieving Objectives: Since the inception of the program in February 1967, 14 companies have been provided with technical assistance. The continuous reports submitted by the project engineers indicate that those contacts made thus far have been worthwhile. Initially, the field service was made available to all Montana firms; concentrating on chemical processing firms seems more advantageous, both in terms of the ability to service the firms and in terms of building a rapport with industry.

Direct Benefits: A summary of the firms visited and the technical assistance provided has been submitted to the designated agency and to the Office of State Technical Services in Washington. Actual technological applications will be evaluated subsequently.

Evaluation Procedures: Thus far, evaluation has been limited to maintaining a continuous report of the firms visited, time spent with each firm and the nature of the problems discussed. These reports are reviewed by the designated agency. Eventually case studies and personal interviews will be included among the evaluation procedures.

Comments and Suggestions: For those field services established in large but sparsely populated states, it may be feasible to begin with a few select industries rather than servicing all industries. Some time was lost in trying to begin a field services program which was too encompassing.

Exhibit D -- Fiscal 1967

State: Montana

Project Year, Number and Title: F7TC2; Publication of a Mining Methods and Equipment Report

Annual Program Reference: p. 53

STS Activity: Report Publication

Technical Area: Mining

Participating Institution: College of Mineral Science and Technology

Department: Bureau of Mines and Geology

Director: R. H. King

Location: Butte, Montana

Project Duration and Status: The project will be completed around December 31, 1967

Project Description: The purpose of this project is to furnish the mining industry with a report describing and illustrating alternative mining operations and equipment. Once published, the report will be included in the reference material used by the field agents in the Mining Visitation Program.

User-Rate Data: none

Effectiveness in Achieving Objectives: No real attempt to evaluate the effectiveness of this program can be made until the report has been published.

Direct Benefits: Again, no direct benefits can be identified until the report is published.

Evaluation Procedures: The number of inquiries and the personal interviews by the field agents using the report will serve as a basis for evaluating this program.

Comments and Suggestions: Although the project has not been completed yet, the value of combining report preparation and field-service activities seems apparent. The

automatic dissemination with such a combined program should greatly improve both the field service and report programs.

Exhibit D -- Fiscal 1967

State: Montana

Project Year, Number and Title: F7TC3; Field Visitation Program

Annual Program Reference: p. 47

STS Activity: Field Service

Technical Area: Mining

Participating Institution: College of Mineral Science and Technology

Department: Montana Bureau of Mines and Geology

Director: Willis Johns

Location: Statewide

Project Duration and Status: Continuing

Project Description: The purpose of this program is to disseminate information on new innovations in machinery, equipment and methods of mining to those who can make effective use of it. The field agents visit all active mines and discuss geological, mining and engineering problems with the mine operator or owner. Technical assistance is given whenever possible.

User-Rate Data: companies, 33

Effectiveness in Achieving Objectives: To date, the mining field visitation program has been well received and a large number of requests for visits have been received as a result of press releases. Several techniques that have been pursued in individual cases under the program may have industry-wide applications. Examples of these are geochemical wall rock studies and information on the feasibility and design of portable milling facilities.

Direct Benefits: A summary of the firms visited and the technical assistance provided has been submitted to the designated agency and to the Office of State Technical Services in Washington.

Evaluation Procedures: Thus far, evaluation has been limited to maintaining a continuous report of the firms visited, time spent with each firm and the nature of the problems discussed. These reports are reviewed by the designated agency. Case studies and personal interviews will eventually be included among the evaluation efforts.

Comments and Suggestions: This field service program is, in the opinion of the designated agency, one of Montana's most successful programs. The field agents are capable, the administration has been effective and the rapport with industry has been very good.

EXHIBIT E

Exhibit E: Report of Project Expenditures For Fiscal Year 1967

State: Montana
Institution: University of Montana
Department: Forestry
Director: M. L. Haiges
Project Year, Number, Title: F6MN1--Economic Management of Forest Properties
Type Project: Educational

A. Line Item Cost Summary	Approved Budget	Fiscal Year Costs	Balance
Salaries and Wages	$650.00	$532.40	$117.60
Employee Benefits	52.00	40.00	12.00
Lecturers and Consultants	---	204.30	(204.30)
Travel	---	---	---
Consumable Supplies	300.00	109.61	190.39
Equipment (depreciation, rental, approved purchase)	---	---	---
Communications	---	---	---
Printing	---	---	---
Miscellaneous	---	277.93	(277.93)
Total Direct Costs	1,002.00	1,164.24	(162.24)
Indirect Costs	360.00	391.18	(31.18)
Indirect Rate 36%			
Totals	$1,362.00	$1,555.42	$(193.42)

B. Sources Amounts of Nonfederal Matching Funds

	Approved Budget	Applied to Date
State Appropriations	---	---
Institutional Funds	---	---
Contributed Services, Facilities	$681.00	$394.42
User Fees This Project	---*	480.00*
User Fees, Other Project	---	---
Other Sources (specify)	---	---
Total Nonfederal Matching Funds	$681.00	$874.42

*Excess User Fees Collected (line 4 above)

C. Summary of Federal Participation

Federal Funds in Approved Project Budget	$681.00
Federal Reimbursement to Date	681.00
Balance of Federal Funds	---

D. Certifications

Signature of Project Director or Certifying Officer	Reviewed and Approved at Designated Agency by
____________________	____________________
Title ____________________	Director
Date ____________________	November 1, 1967

Exhibit E: Report of Project Expenditures
For Fiscal Year 1967

State: Montana

Institution: University of Montana

Department: Business Administration

Director: Patricia P. Bragg

Project Year, Number, Title: F6MN2 -- Hospital Accounting Institute

Type Project: Educational

A. Line Item Cost Summary	Approved Budget	Fiscal Year Costs	Balance
Salaries and Wages	$936.00	$936.00	$ ---
Employee Benefits	137.00	74.88	62.12
Lecturers and Consultants	780.00	650.00	130.00
Travel	---	---	---
Consumable Supplies	70.00	63.10	6.90
Equipment (depreciation, rental, approved purchase)	---	---	---
Communications	72.00	11.42	60.58
Printing	---	---	---
Miscellaneous	252.00	39.25	212.75
Total Direct Costs	2,247.00	1,774.65	472.35
Indirect Costs	755.00	596.28	158.72
Indirect Rate 33.6%			
Totals	$3,002.00	$2,370.93	$631.07

B. Sources Amounts of Nonfederal Matching Funds

	Approved Budget	Applied to Date
State Appropriations	---	---
Institutional Funds	---	---
Contributed Services, Facilities	$1,501.00	$479.37
User Fees This Project	--- *	840.00*
User Fees, Other Project	---	1,051.56[1]
Other Sources (specify)	---	---
Total Nonfederal Matching Funds	$1,501.00	$2,370.93

*Excess User Fees Collected (line 4 above)

[1] Excess fees collected on previous project

C. Summary of Federal Participation

Federal Funds in Approved Project Budget	$1,051.56
Federal Reimbursement to Date	1,051.56
Balance of Federal Funds	---

D. Certifications

Signature of Project Director or Certifying Officer	Reviewed and Approved at Designated Agency by
______________________	______________________
Title______________________	Director
Date______________________	November 1, 1967

Exhibit E: Report of Project Expenditures For Fiscal Year 1967

State: Montana

Institution: University of Montana

Department: Forestry

Director: T. Nimlos

Project Year, Number, Title: F7MN3 -- Soil Technology Workshop

Type Project: Educational

A. Line Item Cost Summary	Approved Budget	Fiscal Year Costs	Balance
Salaries and Wages	$900.00	$1,331.02	$(431.02)
Employee Benefits	72.00	98.48	(26.48)
Lecturers and Consultants	---	133.60	(133.60)
Travel	200.00	21.60	178.40
Consumable Supplies	800.00	118.36	681.64
Equipment (depreciation, rental, approved purchase)	---	---	---
Communications	300.00	12.90	287.10
Printing	---	---	---
Miscellaneous	---	---	---
Total Direct Costs	2,272.00	1,715.96	556.04
Indirect Costs	763.00	576.56	186.44
Indirect Rate 33.6%			
Totals	$3,035.00	$2,292.52	$742.48

B. Sources Amounts of Nonfederal Matching Funds

	Approved Budget	Applied to Date
State Appropriations	---	---
Institutional Funds	---	---
Contributed Services, Facilities	$1,517.50	$629.52
User Fees This Project	--- *	517.00*
User Fees, Other Project	---	---
Other Sources (specify)	---	---
Total Nonfederal Matching Funds	$1,517.50	$1,146.52

*Excess User Fees Collected (line 4 above)

C. Summary of Federal Participation

Federal Funds in Approved Project Budget	$1,517.00
Federal Reimbursement to Date	1,146.00
Balance of Federal Funds	371.00[1]

[1] Additional expenses have been vouchered and will be submitted at a later date

D. Certifications

Signature of Project Director or Certifying Officer	Reviewed and Approved at Designated Agency by
______________________	______________________
Title ______________________	Director
Date ______________________	November 1, 1967

Exhibit E: Report of Project Expenditures
For Fiscal Year 1967

State: Montana Institution: Montana State University

Department: Civil Engineering & Engr.Mechanics Director: Glen Martin

Project Year, Number, Title: F6SN2 -- Soil Mech. & Found. Engr. Seminar

Type Project: Educational

A. Line Item Cost Summary	Approved Budget	Fiscal Year Costs	Balance
Salaries and Wages	$750.00	$1,970.50	$(1,220.50)
Employee Benefits	60.00	157.64	(97.64)
Lecturers and Consultants	1,000.00	766.39	233.61
Travel	---	71.33	(71.33)
Consumable Supplies	250.00	1,207.55	(957.55)
Equipment (depreciation, rental, approved purchase)	---	---	---
Communications	---	86.05	(86.05)
Printing	700.00	1,425.85	(725.85)
Miscellaneous	---	123.73	(123.73)
Total Direct Costs	2,760.00	5,809.04	(3,049.04)
Indirect Costs	329.70	935.53	(605.83)
Indirect Rate 43.96% of salaries & benefits			
Totals	$3,089.70	$6,744.57	$(3,654.87)

B. Sources Amounts of Nonfederal Matching Funds

	Approved Budget	Applied to Date
State Appropriations	---	---
Institutional Funds	---	---
Contributed Services, Facilities	$1,555.00	$2,313.67
User Fees This Project	---*	1,730.90*
User Fees, Other Project	---	---
Other Sources (specify)	---	---
Total Nonfederal Matching Funds	$1,555.00	$4,044.57

*Excess User Fees Collected (line 4 above)

C. Summary of Federal Participation

Federal Funds in Approved Project Budget	$2,700.00[1]
Federal Reimbursement to Date	2,700.00
Balance of Federal Funds	---

[1] Includes funds from other projects

D. Certifications

Signature of Project Director or Certifying Officer	Reviewed and Approved at Designated Agency by
______________________	______________________
Title ______________________	Director
Date ______________________	November 1, 1967

Exhibit E: Report of Project Expenditures
For Fiscal Year 1967

State: Montana Institution: Montana State University

Department: Civil Engr. and Engr. Mechanics Director: Glen Martin

Project Year, Number, Title: F6SN1 -- Engr. Mechanics & Civ. Engr. Sem.

Type Project: Educational

A. Line Item Cost Summary	Approved Budget	Fiscal Year Costs	Balance
Salaries and Wages	$1,060.00	$1,320.50	$(260.50)
Employee Benefits	84.80	105.64	(20.84)
Lecturers and Consultants	1,650.00	1,438.65	211.35
Travel	---	---	---
Consumable Supplies	150.00	110.01	39.99
Equipment (depreciation, rental, approved purchase)	---	---	---
Communications	---	113.75	(113.75)
Printing	250.00	---	250.00
Miscellaneous	---	---	---
Total Direct Costs	3,194.80	3,088.55	106.25
Indirect Costs	465.98	626.93	(160.95)
Indirect Rate 43.96% of salaries and benefits			
Totals	$3,660.78	$3,715.48	$(54.70)

B. Sources Amounts of Nonfederal Matching Funds

	Approved Budget	Applied to Date
State Appropriations	---	---
Institutional Funds	---	---
Contributed Services, Facilities	$1,831.00	$1,885.48
User Fees This Project	--- *	--- *
User Fees, Other Project	---	---
Other Sources (specify)	---	---
Total Nonfederal Matching Funds	$1,831.00	$1,885.48

*Excess User Fees Collected (line 4 above)

C. Summary of Federal Participation

Federal Funds in Approved Project Budget	$1,830.00
Federal Reimbursement to Date	1,830.00
Balance of Federal Funds	---

D. Certifications

Signature of Project Director or Certifying Officer	Reviewed and Approved at Designated Agency by
______________________	______________________
Title______________________	Director
Date______________________	November 1, 1967

Exhibit E: Report of Project Expenditures
For Fiscal Year 1967

State: Montana

Institution: Mont. College of Min. Science & Technology

Department: Petroleum Engineering

Director: Herbert G. Warren

Project Year, Number, Title: F7TC1 -- Directory of Scientists & Engineers

Type Project: Referral

A. Line Item Cost Summary	Approved Budget	Fiscal Year Costs	Balance
Salaries and Wages	$9,900.00	$3,625.00	$6,275.00
Employee Benefits	792.00	157.30	634.70
Lecturers and Consultants	---	---	---
Travel	---	---	---
Consumable Supplies	1,000.00	229.77	770.23
Equipment (rental)	230.00	51.00	179.00
Communications	---	---	---
Printing & Publication	2,500.00	---	2,500.00
Miscellaneous	---	---	---
Total Direct Costs	14,422.00	4,063.07	10,358.93
Indirect Costs	5,192.00	1,462.71	3,729.29
Indirect Rate 36%			
Totals	$19,614.00	$5,525.78	$14,088.22

B. Sources Amounts of Nonfederal Matching Funds

	Approved Budget	Applied to Date
State Appropriations	---	---
Institutional Funds	---	---
Contributed Services, Facilities	$9,807.00	$2,272.45
User Fees This Project	--- *	--- *
User Fees, Other Project	---	---
Other Sources (specify)	---	---
Total Nonfederal Matching Funds	$9,807.00	$2,272.45

*Excess User Fees Collected (line 4 above)

C. Summary of Federal Participation

Federal Funds in Approved Project Budget	$7,375.00
Federal Reimbursement to Date	4,607.00
Balance of Federal Funds	2,768.00

D. Certifications

Signature of Project Director or Certifying Officer	Reviewed and Approved at Designated Agency by
______________________	______________________
Title ______________________	Director
Date ______________________	November 1, 1967

Exhibit E: Report of Project Expenditures for Fiscal Year 1967

State: Montana

Institution: Montana State University

Department: Industrial Development Center

Director: F. P. McCandless

Project Year, Number, Title: F7SC3--Engineering Research & Devel. Report

Type Project: Newsletter

A. Line Item Cost Summary	Approved Budget	Fiscal Year Costs	Balance
Salaries and Wages	$5,300.00	$2,580.00	$2,720.00
Employee Benefits	424.00	---	424.00
Lecturers and Consultants	---	---	---
Travel	---	---	---
Consumable Supplies	---	---	---
Equipment (depreciation, rental, approved purchase)	---	---	---
Communications	100.00	96.88	3.12
Printing (report preparation)	1,000.00	---	1,000.00
Miscellaneous	---	---	---
Mailing Expense	800.00	---	800.00
Total Direct Costs	7,624.00	2,676.88	4,947.12
Indirect Costs	2,519.00	---	2,519.00
Indirect Rate 44% of salaries and benefits			
Totals	$10,143.00	$2,676.88	$7,466.12

B. Sources Amounts of Nonfederal Matching Funds

	Approved Budget	Applied to Date
State Appropriations	---	---
Institutional Funds	---	---
Contributed Services, Facilities	$5,072.00	$1,338.88
User Fees This Project	--- *	--- *
User Fees, Other Project	---	---
Other Sources (specify)	---	---
Total Nonfederal Matching Funds	$5,072.00	$1,338.88

*Excess User Fees Collected (line 4 above)

C. Summary of Federal Participation

Federal Funds in Approved Project Budget	$3,419.00
Federal Reimbursement to Date	2,193.00
Balance of Federal Funds	1,226.00

D. Certifications

Signature of Project Director or Certifying Officer	Reviewed and Approved at Designated Agency by
______________________	______________________
Title______________________	Director
Date______________________	November 1, 1967

Exhibit E: Report of Project Expenditures
For Fiscal Year 1967

State: Montana Institution: Montana State University

Department: Industrial Development Center Director: F. P. McCandless

Project Year, Number, Title: F7SC4 -- Technical Service Group

Type Project: Field Service

A. Line Item Cost Summary	Approved Budget	Fiscal Year Costs	Balance
Salaries and Wages	$21,276.00	$5,986.65	$15,289.35
Employee Benefits	---	---	---
Lecturers and Consultants	---	---	---
Travel	1,000.00	565.25	434.75
Consumable Supplies	---	---	---
Equipment (depreciation, rental, approved purchase)	---	---	---
Connumications	800.00	43.41	756.59
Printing (Reports)	500.00	---	500.00
Miscellaneous	---	---	---
Total Direct Costs	23,576.00	6,595.31	16,980.69
Indirect Costs	9,361.00	263.41	9,097.59
Indirect Rate 44% of salaries & benefits			
Totals	$32,937.00	$6,858.72	$26,078.28

B. Sources Amounts of Nonfederal Matching Funds

	Approved Budget	Applied to Date
State Appropriations	---	---
Institutional Funds	---	---
Contributed Services, Facilities	$16,479.00	$3,297.31
User Fees This Project	---*	---*
User Fees, Other Project	---	---
Other Sources (specify)	---	---
Total Nonfederal Matching Funds	$16,479.00	$3,297.31

*Excess User Fees Collected (line 4 above)

C. Summary of Federal Participation

Federal Funds in Approved Project Budget	$9,083.00
Federal Reimbursement to Date	5,569.00
Balance of Federal Funds	3,514.00

D. Certifications

Signature of Project Director or Certifying Officer	Reviewed and Approved at Designated Agency by
______________________	______________________
Title ______________	Director
Date ______________	November 1, 1967

Exhibit E: Report of Project Expenditures For Fiscal Year 1967

State: Montana

Institution: College of Mineral Science and Technology

Department: Bureau of Mines

Director: R. H. King

Project Year, Number, Title: F7TC2 -- Publication of a Mining Methods & Equipment Report

Type Project: Report Publication

A. Line Item Cost Summary	Approved Budget	Fiscal Year Costs	Balance
Salaries and Wages	$1,050.00	$300.00	$750.00
Employee Benefits	84.00	24.00	60.00
Lecturers and Consultants	---	---	---
Travel	---	---	---
Consumable Supplies	25.00	17.00	8.00
Equipment (depreciation, rental, approved purchase)	---	---	---
Communications	---	---	---
Printing	1,900.00	---	1,900.00
Miscellaneous	---	---	---
Total Direct Costs	$3,059.00	$341.00	$2,718.00
Indirect Costs	1,101.00	---	1,101.00
Indirect Rate 36%			
Totals	$4,160.00	$341.00	$3,819.00

B. Sources Amounts of Nonfederal Matching Funds

	Approved Budget	Applied to Date
State Appropriations	---	---
Institutional Funds	---	---
Contributed Services, Facilities	$2,235.00	$170.50
User Fees This Project	---*	---*
User Fees, Other Project	---	---
Other Sources (specify)	---	---
Total Nonfederal Matching Funds	$2,235.00	$170.50

*Excess User Fees Collected (line 4 above)

C. Summary of Federal Participation

Federal Funds in Approved Project Budget	$1,363.00
Federal Reimbursement to Date	341.00
Balance of Federal Funds	1,022.00

D. Certifications

Signature of Project Director or Certifying Officer	Reviewed and Approved at Designated Agency by
______________________	______________________
Title ______________________	Director
Date ______________________	November 1, 1967

Exhibit E: Report of Project Expenditures
For Fiscal Year 1967

State: Montana Institution: College of Mineral Science & Technology

Department: Montana Bureau of Mines and Geology Director: Willis Johns

Project Year, Number, Title: F7TC3 -- Field Visitation--Mining

Type Project: Field Service

A. Line Item Cost Summary	Approved Budget	Fiscal Year Costs	Balance
Salaries and Wages	$12,008.00	$4,146.58	$7,861.42
Employee Benefits	974.00	342.09	631.91
Lecturers and Consultants	---	---	---
Travel and Per Diem	4,615.00	749.35	3,865.65
Consumable Supplies	302.00	304.04	(2.04)
Equipment (depreciation, rental, approved purchase)	---	---	---
Communications	---	---	---
Printing and Reproduction	150.00	121.60	28.40
Miscellaneous	---	---	---
Total Direct Costs	18,049.00	5,663.66	12,385.34
Indirect Costs	7,131.00	2,038.91	5,092.09
Indirect Rate 36%			
Totals	$25,180.00	$7,702.57	$17,477.43

B. Sources Amounts of Nonfederal Matching Funds

	Approved Budget	Applied to Date
State Appropriations	---	---
Institutional Funds	---	---
Contributed Services, Facilities	$12,590.00	$3,851.57
User Fees This Project	--- *	--- *
User Fees, Other Project	---	---
Other Sources (specify)	---	---
Total Nonfederal Matching Funds	$12,590.00	$3,851.57

*Excess User Fees Collected (line 4 above)

C. Summary of Federal Participation

Federal Funds in Approved Project Budget	$12,590.00
Federal Reimbursement to Date	5,749.00
Balance of Federal Funds	6,841.00

D. Certifications

Signature of Project Director or Certifying Officer	Reviewed and Approved at Designated Agency by
______________________	______________________
Title ______________________	Director
Date ______________________	November 1, 1967